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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/059,311 | 01/31/2002 | Kyung Chul Woo | 3449-0190P | 5488 |

2292 7590 04/24/2003

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

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| EXAMINER |
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JAGAN, MIRELLYS

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| ART UNIT | PAPER NUMBER |
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2859

DATE MAILED: 04/24/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/059,311

Applicant(s)

WOO ET AL. 

Examiner

Mirellys Jagan

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 2-7 are objected to because of the following informalities:

Claims 2, 4, and 6: Lines 2, respectively: It is not clear what element the term “thereof” is referring to.

Claim 3: Lines 5-6: There is lack of antecedent basis in the claim for “the water gauge chamber” and “the top surface”.

Claim 5: Line 6: There is lack of antecedent basis in the claim for “the water gauge chamber”.

Claim 7: Lines 3 and 6: There is lack of antecedent basis in the claim for “said outer tub”, and for the valve having an upper side. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

The omitted structural cooperative relationships are between the temperature measuring part and the chamber cap in claims 1, 3, and 5. The claims state that the chamber cap has a

Art Unit: 2859

portion for installing the temperature measuring part, but do not state that the temperature measuring part is connected to the chamber cap.

Claims 2, 4, and 6 are rejected for being dependent on a rejected base claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,388,178 to Moon.

Moon discloses a water temperature sensor comprising:

a temperature measuring part including a thermistor (TH₁), which inherently has signal lines for connecting the thermistor with a circuit, for measuring the temperature of water, and a chamber cap (3) located at the bottom edge of water chamber within a washing machine, the chamber cap having a opening under the top surface thereof for installing the temperature measuring part.

6. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 2000000397 to Saito et al [hereinafter Saito].

Saito discloses a washing machine comprising:

an outer tub,

Art Unit: 2859

a drain connector connected to the tub,
a valve connected to the drain connector, for opening and closing by a motor,
a sensor installed between the outer tub and an upper side of the valve for measuring the temperature of the water collected upstream of the valve when the valve is closed.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon, as applied to claims 1 and 3 above, and further in view of Japanese Patent 03179227 to Nagayama et al [hereinafter Nagayama].

Moon discloses a temperature measuring part having all of the limitations of claims 2 and 4, as stated above in paragraph 10, except for the cap having a heat insulating material inserted therein.

Nagayama discloses a temperature measuring part comprising a thermistor for measuring the temperature of water, and a cap having an opening under the top surface thereof for installing the thermistor therein. The cap has a heat insulating material inserted therein in order to insulate and seal the thermistor within the cap.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the part disclose by Moon by adding insulating material in the cap, as disclosed by Nagayama, in order to secure the thermistor within the cap.

9. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon in view of Japanese Patent 59148837 to Koyamoto.

Moon discloses a temperature measuring part comprising a thermistor (6), having signal lines for connecting the thermistor with a circuit, that is mounted in a housing at the bottom edge of a water chamber within a washing machine for measuring the temperature of water.

Moon does not disclose:

the thermistor being mounted within a cap that has a seating portion and a recess for installing the sensor therein and a heat insulating material inserted therein for insulating and supporting the sensor within the cap.

Koyamoto discloses a temperature measuring part for installing into a wall of a chamber to sense the temperature of water held within the chamber. The temperature measuring part comprises:

a temperature sensor having signal lines for connecting the thermistor with a circuit, wherein the sensor is mounted within a cap that has a seating portion and a recess for installing the sensor therein and a heat insulating material inserted therein for insulating and supporting the sensor within the cap.

Referring to claims 1 and 3, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the washing machine disclosed by Moon by

Art Unit: 2859

replacing the temperature measuring part with the temperature measuring part disclosed by Koyamoto, since these parts are alternate and equivalent means for measuring the temperature of the water in the water chamber of the washing machine.

10. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon in view of UK Patent 2,035,683 to Graf.

Moon discloses a temperature measuring part comprising:

a thermistor (6), which inherently has signal lines for connecting the thermistor with a circuit, that is mounted in a housing at the bottom edge of a water chamber within a washing machine for measuring the temperature of water.

Moon does not disclose the thermistor housing being a hollow cap having a seating portion on a predetermined place for installing the thermistor.

Graf discloses a temperature measuring part for installing into a wall of a domestic appliance to sense the temperature of water held within the appliance. The temperature measuring part comprises a thermistor mounted within a cap that has a seating portion and a recess for installing the thermistor therein.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the temperature measuring part disclosed by Moon by replacing the part with the temperature measuring part disclosed by Graf, since these parts are alternate and equivalent means for measuring the temperature of the water in the water chamber of the washing machine.

Art Unit: 2859

11. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon and Graf, as applied to claims 1 and 3 above, and further in view of Nagayama.

Moon and Graf disclose a temperature measuring part having all of the limitations of claims 2 and 4, as stated above in paragraph 14, except for the cap having a heat insulating material inserted therein.

Nagayama discloses a temperature measuring part comprising a thermistor for measuring the temperature of water, and a cap having a opening under the top surface thereof for installing the thermistor therein. The cap has a heat insulating material inserted therein in order to insulate and seal the thermistor within the cap.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the part disclose by Moon and Graf by adding insulating material in the cap, as disclosed by Nagayama, in order to secure the thermistor within the cap.

12. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon in view of Mochizuki.

Moon discloses a temperature measuring part comprising a thermistor (6), which inherently has signal lines for connecting the thermistor with a circuit, that is mounted in a housing at the bottom edge of a water chamber within a washing machine for measuring the temperature of water.

Moon does not disclose:

the thermistor and the signal lines being mounted within a cylindrical probe,

the temperature measuring part comprising a hollow cap having a hole at the center thereof so that the probe can be inserted through the hole so that the probe directly contacts the liquid in the chamber, and

a heat insulating material inserted into a hollow space in the probe for insulating and securing the thermistor in the probe.

Mochizuki discloses a temperature measuring part for installing into a wall of a liquid-containing chamber to sense the temperature of the liquid held within the chamber. The temperature measuring part comprises:

a thermistor (7) having signal lines for connecting the thermistor with a circuit, wherein the thermistor and the signal lines are mounted within a cylindrical probe (2),

a hollow cap (15) having a hole at the center thereof so that the probe can be inserted through the hole so that the probe directly contacts the liquid in the chamber, and

a heat insulating material inserted into a hollow space in the probe for insulating and securing the thermistor in the probe (see figure 4).

Referring to claim 5, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the temperature measuring part disclosed by Moon by replacing the part with the temperature measuring part disclosed by Mochizuki, since these parts are alternate and equivalent means for measuring the temperature of the water in the water chamber of the washing machine.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2859

The following patents and publications disclose temperature sensors:

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|---|--|
| Japanese Patent 06054982 to Asahi et al | U.S. Patent 3,707,857 to Wigfall |
| Japanese Patent 07313780 to Omura et al | U.S. Patent 746,390 to Schmidt |
| Japanese Patent 59125030 to Kobayashi | U.S. Patent 803,352 to Meyer |
| Japanese Patent 63063930 to Suzuki | U.S. Patent 6,148,146 to Poore et al |
| Japanese Patent 03089128 to Fujishima | U.S. Patent 5,870,905 to Imamura et al |
| Japanese Patent 58179325 to Imura et al | U.S. Patent 3,813,942 to Guth |
| Japanese Patent 03035134 to Okada et al | U.S. Patent 108,386 to Phelps |
| Japanese Patent 03133488 to Adachi | U.S. Patent 746,390 to Schmidt |
| Japanese Patent 2000342885 to Yudai | UK Patent 2,100,003 to McAnish |
| Japanese Patent 2001300182 to Adachi | German Patent 4339631 to Herzog et al |
| U.S. Patent Application Publication 2002/0032932 to Kim et al | |

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mirellys Jagan whose telephone number is 703-305-0930. The examiner can normally be reached on Monday-Thursday from 8AM to 4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 703-308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7725 for regular communications and 703-308-7725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

mj
April 21, 2003



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800